

Amendments to the Specification

Page 2, the first full paragraph, lines 2 to 7, replace the paragraph with:

Hydrolysis is one of the process for the decomposition of fluorine compounds, such as PFC and HFC. In this process, water is added to a gaseous fluorine compounds to react them, and fluorine contained in the fluorine compounds is converted to hydrogen fluoride (HF), which is subsequently absorbed by water or an alkaline aqueous solution.

Pages 2-3, the paragraph bridging these pages, page 2, line 21 to page 3, line 3, replace the paragraph with:

It is also known that an organic halogen compounds containing halogen, such as chlorine, fluorine and bromine, can be simultaneously subjected to both hydrolysis and oxidative decomposition as disclosed in Japanese Patent Laid-Open No. 122419/1992 and Japanese Patent Laid-Open No. 220346/1993. These publications specifically disclose decomposition processes of a chlorine compounds such compound such as Freon and PCB.

Page 3, the first full paragraph, lines 4 to 20, replace the paragraph with:

In the case where ~~an organic fluorine compound~~such compounds such as PFC and HFC, is hydrolyzed, a CO gas is formed associated with hydrogen fluoride. Therefore, a CO gas is necessarily processed upon hydrolysis of an organic fluorine compounds. Japanese Patent Laid-Open No. 192653/1998 discloses that CO is oxidized to CO₂ by containing an oxidative gas upon hydrolysis of ~~a~~-fluorine compounds, or in alternative, CO is oxidized with a catalyst after removing hydrogen fluoride from a gas formed by hydrolysis. However, as a result of investigation conducted by the inventors, there is limitation in removal of CO only by containing oxygen or air upon hydrolysis of ~~a~~-fluorine compounds. Furthermore, the process of contacting a gas formed by hydrolysis with a CO oxidation catalyst after removing hydrogen fluoride exhibits a poor efficiency because the high temperature gas formed by hydrolysis is cooled to room temperature for removing hydrogen fluoride and is then again heated.

Pages 3-4, the paragraph bridging these pages, page 3, line 21 to page 4, line 1, replace the paragraph with:

The inventors have found that in the case where a fluorine ~~compound~~such compound such as SF₆ and NF₃, is decomposed over a catalyst, the same problem occurs as in the case of decomposition of PFC and HFC. Specifically, it has been found that when SF₆ or NF₃ is hydrolyzed, SO₂F₂ or N₂O is by-produced together

with hydrogen fluoride. These by-products are also preferably decomposed.

Page 4, the first full paragraph, lines 2 to 9, replace the paragraph with:

Japanese Patent Laid-Open No. 286439/1998 discloses a process for the decomposition of gaseous fluorine-containing ~~compounds~~such compound such as CF_4 , C_2F_6 , and C_3F_8 , by contacting the compounds with molecular oxygen and water in the presence of a catalyst. There is a possibility of forming CO since the supplied amount of molecular oxygen is such an amount that is sufficient to convert a carbon content (carbon atoms) in the fluorine-containing compounds to carbon dioxide and carbon monoxide.

Page 4, the third full paragraph, lines 18 to 22, replace the paragraph with:

An objective of the invention is to provide a process and an apparatus for the decomposition of gaseous substance, such as CO, SO_2F_2 and N_2O , formed upon decomposition of a fluorine compounds with a high efficiency under such a state that the gaseous ~~compounds~~still compound still contains hydrogen fluoride.

Page 4, the fourth full paragraph, lines 23 to 24, replace the paragraph with:

Another object of the invention is to provide a process and an apparatus for the decomposition ~~effect of~~ and removing SO_2F_2 .

Pages 4-5, the paragraph bridging these pages, page 4, line 25 to page 5, line 10, replace the paragraph with:

The invention relates to, as a first embodiment, a process for the decomposition of fluorine compounds with a catalyst comprising a step of contacting the fluorine compounds, in the presence of water vapor, oxygen and an inert gas as a diluent gas, with a fluorine compounds decomposition catalyst and a catalyst the decomposition ~~effect of~~ at least one of CO , SO_2F_2 and N_2O . The fluorine compounds decomposition catalyst and the catalyst for decomposing CO , SO_2F_2 and N_2O may be a mixture or may be a two-stage method, in which the fluorine compounds decomposition catalyst is arranged upstream and the catalyst for decomposing CO , SO_2F_2 and N_2O is arranged downstream.

Pages 5-6, the paragraph bridging these pages, page 5, line 23 to page 6, line 5, replace the paragraph with:

The catalyst for the decomposition ~~effect of~~ at least one of CO , SO_2F_2 or N_2O used herein will be referred to as a harmful component removing catalyst. The harmful component removing catalyst preferably contain at least one selected from Pd, Pt, Cu, Mn, Fe, Co, Rh, Ir and Au in the form of a metal or an oxide. It is also

preferred to further contain at least one oxide selected from La and Ba, whereby the heat resistance is improved.

Page 12, the second full paragraph, lines 9 to 17, replace the paragraph with:

One embodiment of the apparatus for the decomposition of fluorine compounds according to the invention comprises a reactor having a catalyst for decomposing the fluorine compounds and a harmful component removing catalyst charged therein; a heater for heating the catalysts in the reactor; a moisture supplying unit for adding moisture to the fluorine ~~compounds~~supplied compounds supplied to the reactor; an oxygen supplying unit for adding oxygen or an oxygen-containing gas; and an inert gas supplying unit for adding an inert gas as a diluent gas.

Pages 12-13, the paragraph bridging these pages, page 12, line 18 to page 13, line 5, replace the paragraph with:

Another embodiment of the apparatus for the decomposition of fluorine compounds according to the invention comprises a reactor having a catalyst for decomposing the fluorine compounds charged upstream therein and a harmful component removing catalyst charged downstream therein; a heater for heating the catalysts in the reactor; a moisture supplying unit for adding moisture to the fluorine

~~compounds supplied~~ compounds supplied to the reactor; an inert gas supplying unit for adding an inert gas as a diluent gas; and an oxygen supplying unit for adding oxygen or an oxygen-containing gas to a gas stream that flows out from the catalyst for decomposing the fluorine compounds and flows in the harmful component removing catalyst.

Pages 31-32, the paragraph bridging these pages, page 31, line 12 to page 32, line 12, replace the paragraph with:

A decomposition treatment of a fluorine compounds containing C_2F_6 was conducted by using the apparatus shown in Fig. 1, in which an Al-Ti catalyst containing aluminum and titanium as an oxide as the fluorine compounds decomposition catalyst 2 and a Pd and La-carried alumina catalyst as the harmful component removing catalyst 3. The experiment was conducted for both the cases where the harmful component removing catalyst 3 was used and was not used. The material, the composition and the preparation method of the harmful component removing catalyst 3 were the same as in Example 8. The conditions, such as concentrations of the gas to be processed and the reaction temperature at the inlet of the reactor 1, were the same as in Example 8. The Al-Ti catalyst was prepared in the following manner. Commercially available boehmite powder was dried by calcinated at a temperature of 120°C for 1 hour. 248.4 g of a titanium sulfate solution containing 30 wt% of titanium was mixed and kneaded with 200 g of the

powder while pure water was added thereto. After mixing and kneading, the mixture was dried at at-a temperature of from 250 to 300°C for about 5 hours and at a temperature of 700°C for 2 hours. The thus resulting powder was put in a metallic mold and subjected to compression molding at a pressure of 500 kgf/cm². The molded article was pulverized and classified to obtain a particle diameter of from 0.5 to 1 mm. A catalyst containing 90 mol% of Al and 10 mol% of Ti was thus obtained.